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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/599,136	01/24/2007	Robert Gordon Hood	9931-012US	4863
79526	7590	03/17/2011	EXAMINER	
DeMont & Breyer, LLC 100 Commons Way, Ste. 250 Holmdel, NJ 07733			WOOD, ELLEN S	
			ART UNIT	PAPER NUMBER
			1782	
			NOTIFICATION DATE	DELIVERY MODE
			03/17/2011	ELECTRONIC

**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

international@dblaw.com

<b>Office Action Summary</b>	<b>Application No.</b> 10/599,136	<b>Applicant(s)</b> HOOD ET AL.	
	<b>Examiner</b> ELLEN S. WOOD	<b>Art Unit</b> 1782	

**-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --**

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☒ Responsive to communication(s) filed on 23 March 2010.
- 2a) ☐ This action is **FINAL**.                      2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 1,2,40-43 and 45-80 is/are pending in the application.
- 4a) Of the above claim(s) 53-80 is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-2, 40-43 and 45-52 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All    b) ☐ Some \*    c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- |   |   |
|---|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)         | 4) <input type="checkbox"/> Interview Summary (PTO-413)           |
| 2) <input type="checkbox"/> Notice of Draftperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____                                      |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)         | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date _____   | 6) <input type="checkbox"/> Other: _____                          |

### **DETAILED ACTION**

1. Applicant's arguments, filed 03/23/2010, with respect to claims 1-2 and 40-52 have been fully considered and are persuasive. The rejections of claims 1-2 and 40-52 as set forth in the Non-Final Office Action dated 11/30/2009 have been withdrawn.

### ***Claim Rejections - 35 USC § 103***

2. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

3. Claims 1-2, 40-43, 45-50 and 52 are rejected under 35 U.S.C. 103(a) as being unpatentable over Houston et al. (US 2003/0120257, hereinafter "Houston") in view of Houston et al. (US 2004/0037986) and in further view of Popadiuk et al. (US 5,556,426, hereinafter "Popadiuk").

In regards to claim 1, Houston discloses introducing a helical formation into a flexible tubular material [abstract]. A side of the wall tube being deformed to form a helical formation in the internal surface of the side wall of the tube [0006]. The internal helical formations impart a helical flow to fluid passing through the tubular portion [0002-0003].

Houston discloses that the correct helix angle of indentation is based on trial and error or whatever other appropriate grounds the best result in terms of elimination of turbulent flow and dead flow areas in and downstream of the implant [0039].

Houston is silent with the helix angle on the internal helical protrusion.

Houston et al. disclose a graft that has an internal helical protrusion with a helix angle between 5 degrees and 50 degrees [0013].

It would have been obvious to one of ordinary skill in the art at the time of the invention to utilize the internal helix angle of Houston et al. in the internal helical protrusion of Houston, because the helix angle of Houston et al. provides the tubing with the best angle for liquid flowing through the tubing [0050].

The combination of Houston and Houston et al. is silent with regards to the external helical formation located around the outside of the tubular portion for supporting the tubular portion.

Popadiuk discloses a fluoropolymer filament wrapped helically around the external surface of a flexible implantable luminal device (abstract). The filaments may be wrapped around the central tube at angle of winding, relative to the axis, of from about 30 degrees to about less than 90 degrees (col. 9 lines 61-64). Thus, the filaments are wound around the tube at a different helix angle than the helix angle of the internal protrusions.

It would have been obvious to one of ordinary skill in the art to utilize helically wrapping a fluoropolymer filament as disclosed by Popadiuk around the external surface of a flexible tubular material of Houston, because the helically wrapped fluoropolymer filament of Popadiuk provides reinforcement such that the tubes have superior physical characteristics, such as resistance to suture-induced tears and various

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types of deformation induced by extraneous stresses generated during implantation as well in situ (Popadiuk col. 3 lines 42-53).

In regards to claims 2 and 40, Houston discloses that the blood flow tubing may be a vascular graft [0003].

In regards to claims 41-43, 50 and 52, Houston discloses that after forming the helical formation, a polyurethane dispersion is applied to the corresponding indentation on the external side wall of the tubing [0034]. A former is then used to press the polyurethane into the material [0034]. The polyurethane is used to fill the external indentation of the internal helical formation [0034]. Thus, the internal helical protrusion comprises a section of the tubular portion deformed by an axially extending deformation helix.

In regards to claim 45, Popadiuk discloses that the filaments may be wrapped around the central tube at angle of winding, relative to the axis, of from about 30 degrees to about less than 90 degrees (col. 9 lines 61-64), which is greater than the 16 degree angle of the internal helical formation disclosed by the combination of Houston and Houston et al.

In regards to claim 46, Houston et al. disclose a graft that has an internal helical protrusion with a helix angle between 5 degrees and 50 degrees [0013].

In regards to claim 47-48, Popadiuk discloses that the filaments may be wrapped around the central tube at angle of winding, relative to the axis, of from about 30 degrees to about less than 90 degrees (col. 9 lines 61-64).

In regards to claim 49, the combination of Houston and Houston et al. is silent with regards to the material used for the tubular portion.

Popadiux discloses that vascular grafts are generally made from fluoropolymers (col. 5 lines 54-67). The preferred fluoropolymer is PTFE (col. 6 line 8).

It would have been obvious to one of ordinary skill in the art to utilize PTFE in the tubular conduit as disclosed by Popadiux for the flexible material disclosed by the combination of Houston and Houston et al, because utilizing PTFE in the tubular conduit as disclosed by Popadiux produces a graft that is flexible, porous and capable of being extruded, stretched and sintered (col. 6 lines 1-5).

4. Claim 51 is rejected under 35 U.S.C. 103(a) as being unpatentable over Houston et al. (US 2003/0120257, hereinafter "Houston") in view of Houston et al. (US 2004/0037986) in further view of Popadiuk et al. (US 5,556,426, hereinafter "Popadiuk") and in further view of McHaney et al. (US 5,827,327, hereinafter "McHaney").

The combination of Houston, Houston et al. and Popadiuk disclose the tubular conduit as previously discussed.

The combination of Houston, Houston et al. and Popadiuk is silent with regards to the inside having a carbon coating.

McHaney discloses a vascular graft which comprises carbon as an integral part of the wall of the tubular graft (col. 1 lines 8-14).

It would be obvious to one of ordinary skill in the art to combine the carbon coating of McHaney with the internal wall of the vascular graft of Caro, because the

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carbon coating of McHaney provides a vascular graft that exhibits a less thrombogenic blood contact surface with a minimal amount of carbon leaching and the carbon containing graft facilitates the binding of a time releasable bioactive substances, such as an anticoagulant or antimicrobial agent, to the graft (col. 2 lines 29-40).

### ***Response to Arguments***

5. Applicant's arguments with respect to claims 1-2, 41-43 and 45-52 have been considered but are moot in view of the new ground(s) of rejection.

### ***Conclusion***

Any inquiry concerning this communication or earlier communications from the examiner should be directed to ELLEN S. WOOD whose telephone number is (571)270-3450. The examiner can normally be reached on M-F 730-5 with every other Friday off.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Rena Dye can be reached on (571)272-3186. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/ELLEN S WOOD/  
Examiner, Art Unit 1782

/Rena L. Dye/  
Supervisory Patent Examiner, Art Unit 1782